

ABSTRACT

A fly-eye lens 30 formed by arranging a plurality of condensing lenses 32 in a matrix on a plane, a CMOS sensor 10 having a light receiving surface arranged in parallel to the fly-eye lens 30 at a distance corresponding to the focal length of the condensing lenses 32, and a phase calculation device 20 are provided. A center position calculating part 243 calculates the center positions of bright spots (focal points) of focal point images on the light receiving surface by comparison with luminances of adjacent pixels. A centroid data processing part 245 calculates the 0-order moment (total of bright spot luminances in the centroid operating region), first-order moment in the x direction, and first-order moment in the y direction of the luminance in a centroid operating region centered on the bright spot center position. A centroid position calculating part 261 calculates the centroid position of each bright spot based on these centroid data.